Amendments to the Claims

Applicant respectfully requests reconsideration of this application as amended. Claims 1, 3-25, 27-39 are pending in this application. Claims 1 and 25 have been amended; claims 2 and 26 have been canceled; and no claims have been added.

Listing of Claims:

1.   (Currently Amended) A machine-readable medium that provides instructions, which when executed by a set of processors, cause said set of processors to perform operations comprising:

        provisioning a non-BLSR protected layer 2/3 channel over a BLSR;

        provisioning a tunnel over the BLSR, wherein the tunnel is a multi-protocol label switching (MPLS) tunnel; and

        protecting the non-BLSR protected layer 2/3 channel between a first and second node of the BLSR with the tunnel.

2.   (Canceled)

3.   (Original) The machine-readable medium of claim 1 further comprising provisioning a second tunnel on the BLSR, the second tunnel to protect the non-BLSR protected layer 2/3 channel between the first node and a second node of the BLSR.

4.   (Original) The machine-readable medium of claim 1 further comprising provisioning a second tunnel on the BLSR, the second tunnel to protect the non-BLSR protected layer 2/3 channel between a third node and a fourth node of the BLSR.

5.   (Original) A machine-readable medium that provides instructions, which when executed by a set of processors, cause said set of processors to perform operations comprising:

inhibiting automatic protection switching on a set of physical channels, the set of physical channels corresponding to a first fiber;

creating a logical working interface and associating the logical working interface to a first physical port, the physical port connecting to the first fiber;

creating a logical protecting interface and associating the logical protecting interface to a second physical port, the second physical port connecting to a second fiber;

associating the logical working and logical protecting interfaces to a forwarding interface, the forwarding interface corresponding to a node;

setting the forwarding interface to refer to the logical working interface while the fiber is not failing; and

modifying the forwarding interface to refer to the logical protecting interface while the fiber is failing.

6.   (Original) The machine-readable medium of claim 5 wherein the logical protecting interface corresponds to a pre-provisioned tunnel.

7.   (Original) The machine-readable medium of claim 5 wherein the logical protecting interface corresponds to an MPLS tunnel.

8.   (Original) The machine-readable medium of claim 5 further comprising establishing a tunnel over a second fiber, the logical protecting interface being associated to the tunnel.

9.   (Original) The machine-readable medium of claim 5 further comprising:

detecting failure of the first fiber; and

transmitting a message on the second fiber to a set of intermediate nodes, the message indicating failure of the first fiber.

10.   (Original) The machine-readable medium of claim 5 further comprising:

transmitting a first set of layer 2/3 traffic in the second physical port while the first fiber is not failing; and

multiplexing the first set of layer 2/3 traffic with a second set of layer 2/3 traffic for transmission in the second physical port while the first fiber is failing, the second set of layer 2/3 traffic being transmitted in the first physical port while the first fiber is not failing.

11. (Original) A machine-readable medium that provides instructions, which when executed by a set of processors, cause said set of processors to perform operations comprising:

inhibiting automatic protection switching on a set of physical channels, the set of physical channels corresponding to a first fiber;

creating a logical working interface and associating the logical working interface to a first physical port, the physical port corresponding to the first fiber;

creating a logical protecting interface and associating the logical protecting interface to a tunnel, the tunnel corresponding to a second fiber;

associating the logical working and logical protecting interfaces to a forwarding interface, the forwarding interface corresponding to a node;

setting the forwarding interface to refer to the logical working interface while the fiber is not failing; and

modifying the forwarding interface to refer to the logical protecting interface while the fiber is failing.

12. (Original) The machine-readable medium of claim 11 wherein the tunnel is pre-provisioned over the second fiber.

13. (Original) The machine-readable medium of claim 11 wherein the tunnel is an MPLS tunnel over the second fiber.

14. (Original) The machine-readable medium of claim 11 further comprising:

detecting failure of the first fiber; and

transmitting a message on the second fiber to a set of intermediate nodes, the message indicating failure of the first fiber.

15.   (Original) The machine-readable medium of claim 11 further comprising:

transmitting a first set of layer 2/3 traffic in the tunnel while the first fiber is not failing; and

multiplexing the first set of layer 2/3 traffic with a second set of layer 2/3 traffic for transmission in the tunnel while the first fiber is failing, the second set of layer 2/3 traffic being transmitted in the first physical port while the first fiber is not failing.

16.   (Original) A network element comprising:

a first fiber connecting the network element to a second network element;

a second fiber connecting the network element to a third network element;

a first optical processing circuitry coupled to the first fiber, the optical processing circuitry to transmit a first set of optical traffic in a first set of physical channels over the first fiber;

a first egress layer 2/3 processing circuitry coupled to the first optical processing circuitry, the first egress layer 2/3 processing circuitry to transmit a set of layer 2/3 traffic to the first optical processing circuitry while the first fiber is not failing, the set of layer 2/3 traffic to be inserted into the first set of optical traffic;

a second optical processing circuitry coupled to the second fiber, the second optical processing circuitry to transmit a second set of optical traffic in a second set of physical channels over the second fiber;

a second egress layer 2/3 processing circuitry coupled to the second optical processing circuitry, the second egress layer 2/3 processing circuitry to transmit the set of layer 2/3 traffic to the second optical processing circuitry while the first fiber is failing, the set of layer 2/3 traffic to be inserted in to the second set of optical traffic;

an ingress layer 2/3 processing circuitry coupled to the first and second egress layer 2/3 processing circuitry, the ingress layer 2/3 processing circuitry to receive and transmit the set of layer 2/3 traffic; and

a control card coupled to the first and second optical processing circuitry and the ingress layer 2/3 processing circuitry, the control card to detect failure of the first fiber, to

indicate failure of the first fiber to the ingress layer 2/3 processing circuitry, and to mask the first and second set of physical channels from automatic protection switching.

17.   (Original) The network element of claim 16 wherein the set of layer 2/3 traffic is multiplexed with a second set of layer 2/3 traffic on the second egress layer 2/3 processing circuitry.

18.   (Original) The network element of claim 16 further comprising a tunnel to carry the set of layer 2/3 traffic in the second set of physical channels while the first fiber is failing.

19.   (Original) The network element of claim 16 further comprising an MPLS tunnel to carry the set of layer 2/3 traffic in the second set of physical channels while the first fiber is failing.

20.   (Original) The network element of claim 16 wherein the ingress layer 2/3 processing circuitry includes:
        a forwarding interface to forward traffic to the first network element;
        a working interface coupled to the forwarding interface, the working interface to refer to the first physical port; and
        a protecting interface coupled to the forwarding interface, the protecting interface to refer to the second physical port.

21.   (Original) An apparatus comprising:
        a first fiber connecting the network element to a second network element;
        a second fiber connecting the network element to a third network element;
        a first optical processing circuitry coupled to the first fiber, the optical processing circuitry to transmit a first set of optical traffic in a first set of physical channels over the first fiber;
        a first egress layer 2/3 processing circuitry coupled to the first optical processing circuitry, the first egress layer 2/3 processing circuitry to transmit a set of layer

2/3 traffic to the first optical processing circuitry while the first fiber is not failing, the set of layer 2/3 traffic to be inserted into the first set of optical traffic;

a second optical processing circuitry coupled to the second fiber, the second optical processing circuitry to transmit a second set of optical traffic in a second set of physical channels over the second fiber;

a second egress layer 2/3 processing circuitry coupled to the second optical processing circuitry, the second egress layer 2/3 processing circuitry to tunnel the set of layer 2/3 traffic and to pass the set of layer 2/3 traffic to the second optical processing circuitry while the first fiber is failing, the set of layer 2/3 traffic to be inserted in to the second set of optical traffic;

an ingress layer 2/3 processing circuitry coupled to the first and second egress layer 2/3 processing circuitry, the ingress layer 2/3 processing circuitry to receive and transmit the set of layer 2/3 traffic; and

a control card coupled to the first and second optical processing circuitry and the ingress layer 2/3 processing circuitry, the control card to detect failure of the first fiber, to indicate failure of the first fiber to the ingress layer 2/3 processing circuitry, and to mask the first and second set of physical channels from automatic protection switching.

22.   (Original) The network element of claim 21 wherein the set of layer 2/3 traffic is multiplexed with a second set of layer 2/3 traffic on the second egress layer 2/3 processing circuitry.

23.   (Original) The network element of claim 21 wherein the tunnel of the set of layer 2/3 traffic is with MPLS.

24.   (Original) The network element of claim 21 wherein the ingress layer 2/3 processing circuitry includes:

a forwarding interface to forward traffic to the first network element;

a working interface coupled to the forwarding interface, the working interface to refer to the first physical port; and

a protecting interface coupled to the forwarding interface, the protecting interface to refer to the second physical port.

25.   (Currently Amended) A computer implemented method comprising:

provisioning a non-BLSR protected layer 2/3 channel over a BLSR;

provisioning a tunnel over the BLSR, wherein the tunnel is a multi-protocol label switching (MPLS) tunnel; and

protecting the non-BLSR protected layer 2/3 channel between a first and second node of the BLSR with the tunnel.

26.   (Canceled)

27.   (Original) The computer implemented method of claim 25 further comprising provisioning a second tunnel on the BLSR, the second tunnel to protect the non-BLSR protected layer 2/3 channel between the first node and a second node of the BLSR.

28.   (Original) The computer implemented method of claim 25 further comprising provisioning a second tunnel on the BLSR, the second tunnel to protect the non-BLSR protected layer 2/3 channel between a third node and a fourth node of the BLSR.

29.   (Original) A computer implemented method comprising:

inhibiting automatic protection switching on a set of physical channels, the set of physical channels corresponding to a first fiber;

creating a logical working interface and associating the logical working interface to a first physical port, the physical port connecting to the first fiber;

creating a logical protecting interface and associating the logical protecting interface to a second physical port, the second physical port connecting to a second fiber;

associating the logical working and logical protecting interfaces to a forwarding interface, the forwarding interface corresponding to a node;

setting the forwarding interface to refer to the logical working interface while the fiber is not failing; and

modifying the forwarding interface to refer to the logical protecting interface while the fiber is failing.

30.   (Original) The computer implemented method of claim 29 wherein the logical protecting interface corresponds to a pre-provisioned tunnel.

31.   (Original) The computer implemented method of claim 29 wherein the logical protecting interface corresponds to an MPLS tunnel.

32.   (Original) The computer implemented method of claim 29 further comprising establishing a tunnel over a second fiber, the logical protecting interface being associated to the tunnel.

33.   (Original) The computer implemented method of claim 29 further comprising:

detecting failure of the first fiber; and

transmitting a message on the second fiber to a set of intermediate nodes, the message indicating failure of the first fiber.

34.   (Original) The computer implemented method of claim 29 further comprising:

transmitting a first set of layer 2/3 traffic in the second physical port while the first fiber is not failing; and

multiplexing the first set of layer 2/3 traffic with a second set of layer 2/3 traffic for transmission in the second physical port while the first fiber is failing, the second set of layer 2/3 traffic being transmitted in the first physical port while the first fiber is not failing.

35.   (Original) A computer implemented method comprising:

inhibiting automatic protection switching on a set of physical channels, the set of physical

channels corresponding to a first fiber;

creating a logical working interface and associating the logical working interface to a first

physical port, the physical port corresponding to the first fiber;

creating a logical protecting interface and associating the logical protecting interface to a

tunnel, the tunnel corresponding to a second fiber;

associating the logical working and logical protecting interfaces to a forwarding interface,

the forwarding interface corresponding to a node;

setting the forwarding interface to refer to the logical working interface while the fiber is

not failing; and

modifying the forwarding interface to refer to the logical protecting interface while the

fiber is failing.

36.   (Original) The computer implemented method of claim 35 wherein the tunnel is pre-
provisioned over the second fiber.

37.   (Original) The computer implemented method of claim 35 wherein the tunnel is an
MPLS tunnel over the second fiber.

38.   (Original) The computer implemented method of claim 35 further comprising:

detecting failure of the first fiber; and

transmitting a message on the second fiber to a set of intermediate nodes, the message

indicating failure of the first fiber.

39.   (Original) The computer implemented method of claim 35 further comprising:

transmitting a first set of layer 2/3 traffic in the tunnel while the first fiber is not failing;

and

multiplexing the first set of layer 2/3 traffic with a second set of layer 2/3 traffic for transmission in the tunnel while the first fiber is failing, the second set of layer 2/3 traffic being transmitted in the first physical port while the first fiber is not failing